

FORM-PTO-1390
(Rev. 5-93)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

2486-1-003

U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5)

09/700818INTERNATIONAL APPLICATION NO.
PCT/ES99/00145INTERNATIONAL FILING DATE
May 19, 1999PRIORITY DATE CLAIMED
May 20, 1998

TITLE OF INVENTION

ADDITIVE FOR SPECIAL PLASTERS AND MORTARS, COMPOSITIONS CONTAINING THE ADDITIVE AND UTILIZATION OF THE ADDITIVE IN SPECIAL PLASTERS AND MORTARS

APPLICANT(S) FOR DO/EO/US

Antonio ALVAREZ BERENGUER; Francisco Javier LIMPO OROZCO; Bernardo Enrique DEL VALLE ÁLVAREZ

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

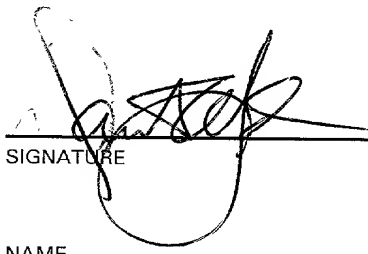
1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and the PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☒ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☒ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

Front Page of International Published Application; International Search Report; Written Opinion and Response; International Preliminary Examination Report

EXPRESS MAIL "MAILING CERTIFICATE NO.": EL684490041US DATE OF DEPOSIT: NOVEMBER 20, 2000

U.S. APPLICATION NO. (If known, use 37 CFR 1.50) 09/7700818		INTERNATIONAL APPLICATION NO. PCT/ES99/00145		ATTORNEY'S DOCKET NUMBER 2486-1-003	
17. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS	PTO USE ONLY
Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO \$860.00 International preliminary examination fee paid to USPTO (37 CFR 1.492) \$690.00 No international preliminary examination fee paid to USPTO (37 CFR 1.492) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$710.00 Neither international preliminary examination fee (37 CFR 1.492) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$1000.00 International preliminary examination fee paid to USPTO (37 CFR 1.492) and all claims satisfied provisions of PCT Article 33(2)-(4) \$ 100.00					
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 1,000.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492(e)). <input type="checkbox"/> 20 <input type="checkbox"/> 30				\$	
Claims	Number Filed	Number Extra	Rate		
Total Claims	12 -20 =	0	X \$ 18.00	\$.00	
Independent Claims	1 -3 =	0	X \$ 80.00	\$.00	
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$.00	
TOTAL OF ABOVE CALCULATIONS =				\$ 1,000.00	
Reduction for 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$	
SUBTOTAL =				\$ 1,000.00	
Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492(f)). <input type="checkbox"/> 20 <input type="checkbox"/> 30				\$.00	
TOTAL NATIONAL FEE =				\$ 1,000.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$	
TOTAL FEES ENCLOSED =				\$ 1,000.00	
				Amount to be:	
				refunded	\$
				charged	\$
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>1,000.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. <u>11-1153</u> in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account <u>11-1153</u> . A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
DAVID A. JACKSON KLAUBER & JACKSON 411 HACKENSACK AVENUE 4TH FLOOR HACKENSACK, NEW JERSEY 07601					
 SIGNATURE					
NAME					
DAVID A. JACKSON					
REGISTRATION NUMBER 26,742					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Antonio ALVAREZ BERENGUER *et al*
APPLICATION NO. : PCT/ES99/00145
FILED : May 19, 1999
FOR : ADDITIVE FOR SPECIAL PLASTERS AND MORTARS,
COMPOSITIONS CONTAINING THE ADDITIVE AND
UTILIZATION OF THE ADDITIVE IN SPECIAL PLASTERS
AND MORTARS

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
BOX PCT
WASHINGTON, D.C. 20231

Sir:

Prior to calculating the fees pursuant to the entry into the National Phase of the above-identified Application, please amend the Specification and Claims as follows:

IN THE SPECIFICATION:

On Page 1 and on Page 12, at the tope of the page, please change the title to the following:

--ADDITIVE FOR SPECIAL PLASTERS AND MORTARS, COMPOSITIONS
CONTAINING THE ADDITIVE AND UTILIZATION OF THE ADDITIVE IN
SPECIAL PLASTERS AND MORTARS--

IN THE CLAIMS:

In Claim 4, line 1, delete "2 or 3,".

In Claim 5, line 1, delete "2 or 3,".

In Claim 8, line 1, delete "2 or 3,".

In Claim 9, line 6, delete "any of the claims 1 to 8" and insert --Claim 1--.

Please amend Claims 11 and 12 as follows:

11. (Amended) Use of an additive according to [any of the] claim[s] 1[-8].

12. (Amended) Use of an additive according to [any of] claim[s] 1[-8] as a component in gypsum.

IN THE DECLARATION:

Please delete the Title on the first page of the Declaration and Power of Attorney and replace it with the following Title:

--ADDITIVE FOR SPECIAL PLASTERS AND MORTARS, COMPOSITIONS
CONTAINING THE ADDITIVE AND UTILIZATION OF THE ADDITIVE IN
SPECIAL PLASTERS AND MORTARS--

REMARKS

The above amendments are submitted herewith to reduce multiple dependencies and to conform the claims more closely to U.S. practice.


The amendments made herein are with respect to Claims 1-12, which claims were amended during the pendency of the International Application and included in the International Preliminary Examination Report. A copy of the Preliminary Examination Report is enclosed herewith and attached hereto. Applicant requests that these claims be considered as of record presently and therefore correspond to the claims as originally presented in the processing of the present application in the National Phase before the U.S. Patent and Trademark Office. To assure that the most current and accurate copy of the instant application is placed before the Examiner for substantive consideration, Applicants submit herewith a full copy of the Application with the amendments made therein. Applicant also

submits a copy of the claims amended during International processing marked up with the changes made in the present Preliminary Amendment. The changes made during International processing are believed to be appropriate and are not believed to raise the issue of new matter, and entry and favorable consideration and substantive examination thereof is accordingly requested.

The Title has been amended on the enclosed Specification and the executed Declaration and Power of Attorney. Certain errors occurred during the translation of the Title into English and the correct translation is that which is set forth on the front page of the International Published Application.

Confirmation that Claims 1-12 as attached are already the claims as filed and pending herein, entry of the foregoing amendments and early and favorable processing in the National Phase before the United States Patent and Trademark Office are courteously solicited.

Respectfully submitted,



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Registration No. 26,742

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Hackensack, NJ 07601
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PATENT
2486-1-003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Antonio ALVAREZ BERENGUER *et al*
APPLICATION NO. : PCT/ES99/00145
FILED : May 19, 1999
FOR : ADDITIVE FOR SPECIAL PLASTERS AND MORTARS,
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PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
BOX PCT
WASHINGTON, D.C. 20231

Sir:

Prior to calculating the fees pursuant to the entry into the National Phase of the above-identified Application, please amend the Specification and Claims as follows:

IN THE SPECIFICATION:

On Page 1 and on Page 12, at the top of the page, please change the title to the following:

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IN THE CLAIMS:

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In Claim 5, line 1, delete "2 or 3,".

In Claim 8, line 1, delete "2 or 3,".

In Claim 9, line 6, delete "any of the claims 1 to 8" and insert --Claim 1--.

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11. (Amended) Use of an additive according to [any of the] claim[s] 1[-8].

12. (Amended) Use of an additive according to [any of] claim[s] 1[-8] as a component in gypsum.

IN THE DECLARATION:

Please delete the Title on the first page of the Declaration and Power of Attorney and replace it with the following Title:

--ADDITIVE FOR SPECIAL PLASTERS AND MORTARS, COMPOSITIONS
CONTAINING THE ADDITIVE AND UTILIZATION OF THE ADDITIVE IN
SPECIAL PLASTERS AND MORTARS--

REMARKS

The above amendments are submitted herewith to reduce multiple dependencies and to conform the claims more closely to U.S. practice.

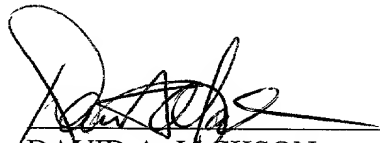
The amendments made herein are with respect to Claims 1-12, which claims were amended during the pendency of the International Application and included in the International Preliminary Examination Report. A copy of the Preliminary Examination Report is enclosed herewith and attached hereto. Applicant requests that these claims be considered as of record presently and therefore correspond to the claims as originally presented in the processing of the present application in the National Phase before the U.S. Patent and Trademark Office. To assure that the most current and accurate copy of the instant application is placed before the Examiner for substantive consideration, Applicants submit herewith a full copy of the Application with the amendments made therein. Applicant also

submits a copy of the claims amended during International processing marked up with the changes made in the present Preliminary Amendment. The changes made during International processing are believed to be appropriate and are not believed to raise the issue of new matter, and entry and favorable consideration and substantive examination thereof is accordingly requested.

The Title has been amended on the enclosed Specification and the executed Declaration and Power of Attorney. Certain errors occurred during the translation of the Title into English and the correct translation is that which is set forth on the front page of the International Published Application.

Confirmation that Claims 1-12 as attached are already the claims as filed and pending herein, entry of the foregoing amendments and early and favorable processing in the National Phase before the United States Patent and Trademark Office are courteously solicited.

Respectfully submitted,



DAVID A. JACKSON
Attorney for Applicant(s)
Registration No. 26,742

KLAUBER & JACKSON
411 Hackensack Avenue
Hackensack, NJ 07601
(201) 487-5800

CLAIMS

1. An additive for gypsum and special mortar that comprises a solid mineral component selected from among clay, characterized in that it comprises at least a modified natural gum, and in that the mineral component is a rheological grade clay selected from among attapulgite, sepiolite and mixtures thereof.
2. An additive according to claim 1, characterized in that the additive comprises at least
20-75% by weight of the solid mineral component;
25-80% by weight of modified natural gum.
3. An additive according to claim 1, characterized in that it comprises
35-60% by weight of the solid mineral component;
40-65% by weight of modified natural gum.
4. An additive according to claim 1, [2 or 3] characterized in that the solid mineral component is rheological grade sepiolite.
5. An additive according to claim 1, [2 or 3] characterized in that the modified natural gum is at least one combination of at least two monosaccharides, glucose, mannose, galactose, and glucuronic acid, modified by etherification.
6. An additive according to claim 6, characterized in that the combination of monosaccharides is etherified with an alkylene oxide selected from among ethylene oxide, propylene oxide and butylene oxide.
7. An additive according to claim 6, characterized in that the monosaccharide combination is a galactomanane.

8. An additive according to claim 1, [2 or 3] characterized in that the modified natural gum is modified guar gum.

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9. A filled composition of conglomerate building material selected from among gypsum and special mortar, that comprises a fraction selected from among a cement fraction, a gypsum fraction and an aggregate fraction, characterized in that it also comprises 0.05-1.2% by weight of the additive defined in [any of the] claims [1 to 8].

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10. A filled composition according to claim 9, characterized in that it comprises 0.2-0.9% by weight of the additive.

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11. Use of an additive according to [any of the] claims [1-8], as a component in a special mortar.

12. Use of an additive according to [any of] claims [1-8] as a component in gypsum.

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09/700818
532 Rec'd PCT/PTO 20 NOV 2000

**COMPLETE TEXT INCLUDING ALL THE AMENDMENTS MADE
DURING INTERNATIONAL PHASE**

**TITLE OF THE INVENTION****ADDITIVE FOR GYPSUM AND SPECIAL MORTAR, COMPOSITIONS THAT
CONTAIN THE ADDITIVE AND USE OF THE ADDITIVE IN GYPSUM
AND SPECIAL MORTAR**

5

TECHNICAL FIELD OF THE INVENTION

The present invention fits in the field of compounds and compositions useful as conglomerate building materials, and more specifically in the sector of water retaining additives for conglomerate building materials such as special mortar and gypsum.

PRIOR ART OF THE INVENTION

In the last few years, filled conglomerate building material compositions are being used more and more in replacement of conglomerate building materials, since they have noteworthy advantages as to their placement conditions, such as workability, initial degree of adherence and water retaining power during kneading, etc., as well as in their final properties, such as for example their qualities of adherence, resistance and finish.

These filled conglomerate building material compositions include additives, additional to the components of traditional conglomerate building materials, that provide the above mentioned advantageous properties.

Within the different types of filled conglomerate building materials, there are some whose final properties require the use of a thickening agent and water retaining agent. Among these materials are special mortar and gypsum that are used in very different applications such as the bonding among enclosures or supports with different ceramic materials, facade coverings, repairing and engobing.

Gypsum and special mortar, such as glue mortar, conventionally comprise a series of additives, such as for example water retaining agents. A water retaining agent is a product that due to its molecular structure and to

its surface properties bonds to the water by means of "weak bonds" and retains the water in the matrix of the conglomerates during the setting and hardening process. The rheology in the paste that is formed is improved. The water retaining additives conventionally used for conglomerate building materials such as special mortar and gypsum, are based on cellulose-like derivatives, no alternative thereto being known up until the present.

European patent application EP-A-0773198 describes a thickening system that contains at least a cellulose-like ether, a starch ether, thickening components and a layer silicate such as sepiolite, bentonite and other clay, that correspond to such an additive on the market.

Cellulose-like derivatives provide, based on their thickening effects, greater consistency to conglomerate building materials aside from increasing their water retaining and adherence capacities. Nonetheless, cellulose-like derivatives have the disadvantage of being relatively expensive and therefore conglomerate building materials such as traditional mortar and gypsum, without or with less than the necessary doses of such derivatives, are still being used, despite their poorer qualities with respect to filled compositions, for many uses when the use of a sufficiently filled conglomerate composition would really be more appropriate.

U.S. patent US-A-5637144 describes a substitutive composition of asbestos that comprises water, water retaining agents and finely divided clay, especially bentonite, while U.S. patent US-A-4028127 describes a mixture of cement comprised of gypsum with the product resulted from reacting a guar hydroxyalkyl ether with glyoxal that is useful to cover up cracks and holes in surfaces. None of the compositions described in the above mentioned U.S. patents can be applied as mortar or gypsum.

OBJECT OF THE INVENTION

An object of the present invention is to overcome the inconveniences of conventional gypsum and special mortar, that comprise cellulose-like derivatives, by means of the replacement of such derivatives by a new additive that allows achievement of placement and final qualities at least similar to said conventional filled compositions and in turn allow a reduction of the total cost of the final compositions.

Another object of the invention is to make available a new additive that improves at least one of the placement and final qualities with respect to conventional gypsum and special mortar.

Another object of the invention is to make available a new additive for gypsum, special mortar, such as glue mortar, single layer.

The present invention also has the object of filled compositions comprising special mortar and gypsum that contain the additive as well as the use of the new additive in special mortar and gypsum.

20 **DESCRIPTION OF THE INVENTION**

The above defined objects are achieved by means of a new additive for gypsum and special mortar, free of cellulose-like derivatives, whose additive comprises at least a solid mineral component selected from among clay, and at least a modified natural gum, in which the mineral component is a solid mineral component selected from among rheological grade sepiolite, rheological grade attapulgite and mixtures thereof. Preferably, the additive according to the invention comprises

30 20-75%, and more preferably 35-60%, of the solid mineral component;

 25-80%, and more preferably 40-65%, of a modified natural gum.

 According to the invention, the solid mineral component is at least a rheological grade clay selected from

among attapulgite, sepiolite and mixtures thereof.

The solid mineral component is preferably rheological grade sepiolite such as the one described for example in European patent applications EP-A-0454222 and EP-A-0107299, whose content is included in the present description by reference.

Rheological grade sepiolite, marketed for example by TOLSA, S.A., Madrid, Spain, under the trade mark PANGEL, and obtained from natural sepiolite by means of special micronization processes that substantially prevent breakage of the sepiolite fibers, disperses easily in water and other polar liquids, and has an external surface with a high degree of irregularity, a high specific surface, greater than 300 m²/g and a high density of active centers for adsorption, that provide it a very high water retaining capacity upon being capable of forming, with relative ease, hydrogen bridges with said active centers.

The microfibrinous nature of the rheological grade sepiolite particles makes sepiolite a material with high porosity and low apparent density. Due to the above mentioned properties, rheological grade sepiolite is capable of forming high viscosity pastes with excellent thixotropic and pseudoplastic behavior. In accordance with the invention, it has been verified that, when rheological grade sepiolite is added, along with a modified natural gum, to conglomerate building materials such as special mortar and gypsum, the adhesiveness, cohesion, surface efficiency, stability and texture of the mortar and gypsum are improved.

Additionally, rheological grade sepiolite has a very low cationic exchange capacity and the interaction with electrolytes is very weak, which in turn causes rheological grade sepiolite not to be practically affected by the presence of salts in the medium in which it is found, and therefore, it remains stable in a broad pH range. This

final characteristic proves to be of the utmost importance since the mediums in which they work have a high salt content.

5 The above mentioned advantages and qualities pointed out with regard to rheological grade sepiolite, can also be attributed to rheological grade attapulgite with particle sizes smaller than 40 micra, such as for example the range of ATTAGEL goods (for example ATTAGEL 40 and ATTAGEL 50) manufactured and marketed by the firm Engel-
10 hard Corporation, United States, and the MIN-U-GEL range of Floridin Company.

The modified natural gum may be selected from among combinations of monosaccharides, glucose, mannose, galactose and/or glucuronic acid, modified by successive reac-
15 tions of basification and etherification with ethylene oxide and/or propylene oxide and/or butylene oxide. Preferably, the modified natural gum is a galactomanane, in other words, polysaccharides formed exclusively by galactose and mannose and modified by etherification with
20 polypropylene oxide.

These natural gums have a main chain substantially identical to the chemical structure of cellulose, but they differ from cellulose in that they have lateral chains of other monomers. Their most outstanding func-
25 tional property is that of the rheological agent in aqueous fluids and that of being an effective water retaining agent.

Optionally, the additive according to the present invention may be complemented with other thickening
30 agents such as for example modified starches or polyacrylamides.

The additive according to the present invention, may be prepared by means of mixing its components without any specific order of addition being necessary, for exam-
35 ple, for 5 minutes in a V mixer until a homogeneous prod-

uct is obtained.

In order to add the additive to a conglomerate building material such as for example a special mortar or gypsum, the additive may be mixed together with the aggregate and cement fractions during manufacturing in the case of special mortar or, in the case of gypsum, during the manufacturing of the gypsum. Likewise, the additive according to the present invention may also be added in situ during the mixing with the kneading water.

Inclusion of the additive of the present invention in conglomerate building materials, such as special mortar and gypsum, implies the following characteristics:

- Great water retaining capacity that allows the conglomerate building materials to have good properties in a fresh state and in a hardened state.

- Absence of segregation and exudation, based on the viscosity regulating and thixotropic qualities of the additive that contribute to the homogeneity of the composition of conglomerate materials.

- Workability based on an increase of the thixotropic nature provided to the conglomerate material by the additive, which permits a labor cost reduction in order to achieve a satisfactory final finish.

- Increase of covering capacity per unit of mass of the conglomerate material upon improving its thixotropy and plasticity.

- Possibility to obtain excellent final finishes with very smooth surface textures, upon the additive providing a soft and plastic consistency.

- Great adherence in the fresh state as well as in the hardened state.

The possibility of doing without cellulose-like derivatives in order to achieve the above mentioned qualities in conglomerate materials makes it possible to obtain a reduction of the cost of conglomerate material

with regard to conglomerate materials that comprise cellulose-like derivatives.

EMBODIMENTS OF THE INVENTION

The present invention is additionally illustrated on the basis of the following embodiments.

Example 1: A 50 kg sample of the additive was prepared according to the invention by mixing in a V mixer for 5 minutes the following components:

24 kg of rheological grade sepiolite of TOLSA, S.A. Madrid (Spain)

26 kg of hydroxypropyl guar obtaining a homogenous product.

Example 2: Two samples of mortar, one with a commercial cellulose-like derivative (TYLOSE 10004 MH of HOECHST AG) as an additive, and the other one with the additive according to the present invention prepared in accordance with example 1, were prepared. For this purpose, Portland cement, thick aggregates with a particle size smaller than 1 mm, fine aggregates with a particle size smaller than 0.55 mm, and respectively one of the above mentioned additives were mixed for 5 minutes and each one of the samples were kneaded until glue mortar of the characteristics specified in the following table were obtained::

Table 1

	Sample Portland Cement IIB-45A (p.p.)	Coarse sand (p.p.)	Fine sand (p.p.)	Water (p.p.)	Cellulose-like derivative (p.p.)	Additive of invention (p.p.)
I	310	560	130	250	3	0
II	310	560	130	250	0	6.3

The cost of adding the additive per ton of glue mortar, was approximately 3,220 ptas./t for sample I, that is to say, for the conventional additive, and 2,250

ptas./t for sample II, that is to say, for the additive according to the present invention.

The properties of the glue mortar according to samples I and II were evaluated according to European standards for adhesives for ceramic tiles. The water retention, consistency, vertical slipping, adherence 28 days later and workability were tested after 20 minutes and 28 days after the glue mortar were prepared. The results are shown in the following table:

Table 2

Sample	Water retention (%)	Consistency (mm)	Vertical slipping (mm)	Adherence 28 days (kg/cm ²)	Workability after 20 min. & 28 days (kg/cm ²)
I	99.93	180	0	11	9.1
II	99.94	180	0	11.1	9.0

The results show that the additive object of the present invention (sample II) provides at least the same properties as the conventional additive comprised of cellulose-like derivatives, but at a substantially lower cost.

Example 3: Two samples of glue mortar, one with a commercial cellulose-like derivative (METHOCEL HB of DOW CHEMICAL) as an additive, and the other one with the additive according to the present invention prepared in accordance with example 1 were prepared. For this purpose, Portland cement, coarse aggregates with a particle size smaller than 1 mm, fine aggregates with a particle size smaller than 0.5 mm, and respectively one of the above mentioned additives, were mixed for 5 minutes, and each one of the samples were kneaded until glue mortar with that characteristics that are specified in the following table were obtained:

Table 3

Sample	Portland Cement	Coarse sand	Fine sand	Water (p.p.)	Cellulose-like derivative (p.p.)	Additive of invention (p.p.)
5	IIB-45A	(p.p.)	(p.p.)		(p.p.)	(p.p.)
	(p.p.)					
III	200	600	200	250	2.5	0
IV	200	600	200	250	0	5.25

The cost of adding the additive per ton of glue mortar, was approximately 2,875 ptas./t for sample III, that is to say, for the conventional additive, and 2,200 ptas/t for sample IV, that is to say, for the additive according to the present invention.

The properties of the glue mortar according to samples III and IV were evaluated according to European standards for adhesives for ceramic tiles. The water retention, consistency, vertical slipping, adherence 28 days later and workability were tested after 20 minutes and 28 days after the glue mortar were prepared. The results are shown in the following table:

Table 4

Sample	Water retention (%)	Consistency (mm)	Vertical slipping (mm)	Adherence 28 days (kg/cm ²)	Workability after 20 min. & 28 days (kg/cm ²)
25	III 99.93	180	0	12.2	10.0
	IV 99.93	180	0	12.0	10.3

The results show that the additive object of the present invention (sample IV) provides at least the same properties as the conventional additive comprised of cellulose-like derivatives, but at a substantially lower cost.

CLAIMS

1. An additive for gypsum and special mortar that comprises a solid mineral component selected from among clay, characterized in that it comprises at least a modified natural gum, and in that the mineral component is a rheological grade clay selected from among attapulgite, sepiolite and mixtures thereof.
2. An additive according to claim 1, characterized in that the additive comprises at least
20-75% by weight of the solid mineral component;
25-80% by weight of modified natural gum.
3. An additive according to claim 1, characterized in that it comprises
35-60% by weight of the solid mineral component;
40-65% by weight of modified natural gum.
4. An additive according to claim 1, 2 or 3, characterized in that the solid mineral component is rheological grade sepiolite.
5. An additive according to claim 1, 2 or 3, characterized in that the modified natural gum is at least one combination of at least two monosaccharides, glucose, mannose, galactose, and glucuronic acid, modified by etherification.
6. An additive according to claim 6, characterized in that the combination of monosaccharides is etherified with an alkylene oxide selected from among ethylene oxide, propylene oxide and butylene oxide.
7. An additive according to claim 6, characterized in that the monosaccharide combination is a galactomanane.

8. An additive according to claim 1, 2 or 3, characterized in that the modified natural gum is modified guar gum.

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9. A filled composition of conglomerate building material selected from among gypsum and special mortar, that comprises a fraction selected from among a cement fraction, a gypsum fraction and an aggregate fraction, characterized in that it also comprises 0.05-1.2% by weight of the additive defined in any of the claims 1 to 8.

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10. A filled composition according to claim 9, characterized in that it comprises 0.2-0.9% by weight of the additive.

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11. Use of an additive according to any of the claims 1-8, as a component in a special mortar.

12. Use of an additive according to any of claims 1-8 as a component in gypsum.

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ABSTRACT

**ADDITIVE FOR GYPSUM AND SPECIAL MORTAR, COMPOSITIONS THAT
CONTAIN THE ADDITIVE AND USE OF THE ADDITIVE IN GYPSUM
AND SPECIAL MORTAR**

5 A water retaining additive for conglomerate building ma-
terials, free of cellulose-like derivatives, that com-
prises at least a rheological grade clay, preferably se-
piolite, and a modified natural gum such as guar gum, as
10 well as conglomerate compositions that contain the ad-
ditive, as well as the use of the additive for different
constructions materials comprised of gypsum and special
mortars are described.

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DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below under my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**ADDITIVE FOR GYPSUM AND SPECIAL MORTAR, COMPOSITIONS THAT CONTAIN
THE ADDITIVE AND USE OF THE ADDITIVE IN GYPSUM AND SPECIAL MORTAR**

the Specification of which

☒ is attached hereto
☒ was filed on May 19, 1999
as Application Serial No. PCT/ES99/00145
and was amended on (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified Specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 (a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

<u>APPLICATION</u> <u>NUMBER</u>	<u>PRIOR FOREIGN FILED APPLICATION(S)</u> <u>COUNTRY</u>	<u>(MONTH/DAY/YYYY)</u>	<u>PRIORITY</u> <u>CLAIMED</u>
P 9801042	SPAIN	May / 20 / 1998	YES

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below

<u>APPLICATION NUMBER</u>	<u>FILING DATE(MM/DD/YYYY)</u>
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I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s), or § 365(c) of international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the

prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a), which became available between the filing date of prior application and the national or PCT international filing date of this application:

U.S. Parent <u>Application No.</u>	PCT Parent <u>Number</u>	Parent Filing <u>(MM/DD/YYYY)</u>	Parent Patent <u>Number (if applicable)</u>
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I hereby appoint as my attorneys or agents the following persons: Jack Matalon (Attorney, Registration No. 22,441); Stefan J. Klauber (Attorney, Registration No. 22,604); David A. Jackson (Attorney, Registration No. 26,742); Michael D. Davis (Attorney, Registration No. 39,161); William C. Coppola (Attorney, Registration No. P41,686); Mark S. Cohen (Attorney Registration No. P42,425); Christine E. Dietzel (Agent, Registration No. 37,309); and Donald J. Cox (Attorney, Registration No. 37,804), said attorneys or agents with full power of substitution and revocation to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

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